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Cognitive attentional syndrome and metacognitive beliefs as potential treatment targets for metacognitive therapy in bipolar disorder

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Abstract

Most treatment guidelines emphasize the use of psychotropic drugs for both the acute and maintenance treatment of bipolar disorder (BD). However, relying only on psychotropics without adjunctive psychosocial interventions may be insufficient in treating patients with BD. Given its unique view in the explanation of psychopathological states, metacognitive therapy (MCT) might be helpful for BD. Metacognitive theory posits that psychopathology is a result of the cognitive attentional syndrome (CAS) and that it is influenced and maintained by dysfunctional metacognitive beliefs, perseverative thinking, attentional biases, and dysfunctional coping strategies. In this review, literature data regarding these areas in BD are examined. Studies suggest that perseverative thinking might be among the emotion regulation strategies endorsed in individuals with BD. Regarding attentional biases, literature data show that state-dependent, mood-changing attentional biases and a ruminative self-focused attention are present. Studies also suggest that cognitive self-consciousness is higher in BD compared to controls. It is seen that maladaptive coping strategies are frequently reported in BD, and that these strategies are associated with depression severity, negative affect and relapse risk. Studies focusing on dysfunctional metacognitive beliefs in BD reported that individuals with BD had higher scores for negative metacognitive beliefs, self-consciousness, need to control thoughts, and a lack of cognitive confidence. Also, dysfunctional metacognitive beliefs were associated with depressive symptomatology. These findings suggest that the components of CAS

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and dysfunctional metacognitive beliefs are evident in BD. For a subgroup of patients with BD who fail to respond to evidence-based psychopharmacological and adjunctive psychotherapeutic interventions, MCT might be an alternative way to consider as a treatment option. In conclusion, taken the available data together, we propose a sequential treatment protocol for BD, mainly based on the MCT treatment plan of depressive disorders.

Key Words: Attentional biases; Bipolar disorder; Dysfunctional coping; Metacognition; Metacognitive therapy; Perseverative thinking; Threat monitoring

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Core Tip: Relying only on psychotropics without adjunctive psychosocial interventions may be insufficient in treating patients with bipolar disorder (BD). Given its unique view in the explanation of psychopathological states, metacognitive therapy (MCT) might be helpful. In this review, literature data regarding dysfunctional metacognitive beliefs, perseverative thinking, attentional biases, and dysfunctional coping strategies in BD are examined. Findings suggest that dysfunctional metacognitive beliefs are evident in BD. Taken the available data together, we lastly propose a sequential treatment protocol for BD, mainly based on the MCT treatment plan of depressive disorders.

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INTRODUCTION

Treatment of bipolar disorder (BD) is complex. Most treatment guidelines emphasize the use of psychotropic drugs for both the acute and maintenance treatment of BD[1-4]. However, psychotropics alone without adjunctive psychosocial interventions does not come close to meeting the outcome expectations of providers and patients[5]. Therefore, the effectiveness of many psychotherapeutic interventions has been investigated[6-9]. A recent meta-analysis concluded that adjunctive psychotherapy that emphasizes illness management strategies and enhances adaptive coping skills may benefit individuals with BD[10]. Unfortunately, current psychotherapies also suffer from many shortcomings, and many areas of psychotherapy for BD still need to be explored[11]. Developments in the understanding of psychopathology beyond the current and conventional approaches may help clinicians to provide more efficacious and acceptable treatments to individuals with BD. Given its unique view in the explanation of psychopathological states, metacognitive therapy (MCT) may offer one of these advanced approaches.

MCT AND THEORY

Metacognitive theory posits that psychopathology results from cognitive attentional syndrome (CAS)[12], which involves perseverative thinking styles, attentional biases, and dysfunctional coping strategies. The theory also proposes that CAS is influenced and maintained by dysfunctional metacognitive beliefs. As a treatment modality, MCT targets CAS and metacognitive beliefs to break the vicious cycle in which the patient is mentally stuck.

Perseverative thinking style may manifest as worry and rumination. While worry is generally defined as asking “what if” questions about future events, rumination mostly involves asking “why” questions about past events. These forms of extended thinking cause the person to be trapped in an inescapable thought process. Perseverative

erative thinking increases the negative emotional consequences of the situation at hand, takes long periods of time, and does not aid those who engage in it in solving the problems they faced in the first place. Attentional biases are presented as fixed attention on threats (threat monitoring) or focused attention on the self. As a result, those with attentional biases become more aware of their internal experiences, many of which are negative in essence, which creates a vicious cycle in which they begin to believe that their feelings reflect the reality and that feeling that particular way is appropriate. The more focused they are on their thoughts, feelings, or sensations, the greater their reactions to such stimuli. Focusing on threat cues also increases the likelihood that they will feel distressed by them. Dysfunctional coping strategies, such as thought suppression, avoidance, or substance use, are applied to reduce the feelings of distress, but conversely, those strategies backfire and make the situation worse[12]. Components of CAS are maintained by underlying metacognitive beliefs, which may be either positive or negative. Positive metacognitive beliefs generally relate to the advantageous aspects of CAS, whereas negative metacognitive beliefs mainly center on the uncontrollability of perseverative thinking or the negative consequences of engaging with the CAS[12].

Regarding depressive disorders, metacognitive theory suggests that the person, in response to negative internal experiences – mostly negative automatic thoughts or beliefs – decides to focus attention specifically to dwell on the past or on some real or imagined personal failure. This overthinking pattern may also involve focusing on worries about what may happen in the future, like the recurrence of a new depressive episode. Consequently, this selective and self-referential attentional process extends the negative thinking style, eventually forming a trap from which the person cannot escape. At the same time, the theory also proposes that the person holds some positive beliefs about the benefits of extended thinking, which may be associated with a belief that rumination will help to solve problems or to identify the root cause of negative feelings. On the other hand, the person may also believe that the excessive ruminating is uncontrollable and that it may harm his or her physical or mental well-being or result in social exclusion[13]. In addition, the person with a depressive disorder will engage in dysfunctional, backfiring coping behaviors, which may include inactivity, social withdrawal, alcohol and substance use, repetitive mood- and energy-level checking, self-harming or suicidal behaviors, avoidance of feelings and thoughts, efforts at thought control, and so on. Such beliefs about rumination and such coping behaviors are thought to be the underlying maintenance factors in depressive disorders[12].

To this end, for those with depressive disorders, an MCT therapist first identifies a trigger thought, which generally corresponds to the ruminative thinking style of the patient, and then tries to eliminate, or at least limit, the amount of time the patient spends on rumination. The therapist also works with the patient to find ways to abandon any attentional biases, which generally consist of self-referential, self-focused attention and threat monitoring, and ways to stop engaging with any dysfunctional, backfiring coping strategies. In MCT, additionally, the therapist focuses on identifying and reality-checking any positive and negative metacognitive beliefs so that any maintaining factor is targeted and eliminated[13].

A recent meta-analysis concluded that MCT may be at least as effective as cognitive behavioral therapy for treating depressive disorders[14]. Whether MCT may also be effective for treating BD has yet to be explored. Currently, the literature on the effectiveness of MCT for treating BD is minimal. In the only case series on the application of MCT in individuals with BD type II published thus far, MCT was found to effectively make clinically significant improvements within 7-12 therapy sessions[15].

This review aimed to focus on any developments in the literature that highlight factors associated with the metacognitive model of BD therapy and to propose a theoretical framework for applying MCT for BD. We begin this paper with a summary of what is already known and reported in the literature and identify where the gaps in the research lie, and we end with a theoretical suggestion for the application of MCT for BD patients.

CAS IN BD

Since MCT is transdiagnostic in its approach to psychopathology, CAS in BD also consists of perseverative thinking, attentional biases, and dysfunctional coping strategies. Dysfunctional metacognitive beliefs are the underlying maintenance factors in BD, as they are in any other psychiatric disorder. Some examples of CAS and

dysfunctional metacognitive beliefs that may be encountered in patients with BD are presented in [Table 1](#).

PERSEVERATIVE (EXTENDED) THINKING (RUMINATION AND WORRY)

Adaptive and maladaptive emotion regulation strategies have been defined as transdiagnostic processes[16]. Two recent articles discussed reviews that examined how individuals with BD try to regulate their internal experiences[17,18]. These articles stated that perseverative thinking may be among the emotion regulation strategies endorsed in individuals with BD and in individuals at risk for mania. Although many other forms of perseverative thinking exist, most studies have focused on rumination and, to a lesser extent, on worry in BD patients.

Two earlier reviews on rumination related to BD suggested that rumination, which was present in all phases of the disorder, was independent of the mood state of the individual, although closely related to it. In addition to depressive rumination, which was commonly associated with depressive phases in both major depressive disorder and BD, individuals with BD additionally and uniquely ruminated on positive affect, which can influence the triggering of new episodes. Rumination was also found to have negative consequences on cognitive and executive functions, most importantly, inhibitory control[19,20]. Another review proposed that spontaneous thoughts can predict depressive episodes and BD *via* the mediation of rumination, particularly if it is self-focused, past-focused, or associated with abstract processing and if cognitive control is reduced. Such spontaneous thoughts may be relevant for future BD episodes if they are characterized by goal-striving and if they are frequent, self-centered, and focused on grandiose successes[21].

A recent meta-analysis on rumination associated with BD revealed no significant differences in rumination in general or in depressive rumination between individuals with BD and those with major depressive disorder. However, individuals with BD reported ruminating more often on positive affect than those with major depressive disorder. The results also demonstrated that, albeit non-significant, when comparing BD subtypes with major depressive disorder, a tendency toward more rumination in general in favor of BD type I was observed. This tendency was not observed for individuals with BD type II[22].

Studies published since, or not included in, this meta-analysis have demonstrated similar findings regarding the frequency of rumination and maladaptive emotion regulation strategies in BD patients. Interestingly, increased rumination was found to be a mediator between anxiety levels and suicide behaviors in individuals with BD[23, 24]. Negative rumination has also been proposed as a mediator between traumatic distress and hypomania levels[25]. Another study comparing euthymic BD individuals with healthy controls indicated that both subtypes ruminated more frequently but that they did not worry more. The researchers of that study also suggested that depressive rumination may be a trait-specific feature of BD[26]. Trait rumination—specifically, rumination on positive emotions—was reported to be a characteristic of individuals with remitted BD[27]. Based on a study in which individuals with BD types I and II were compared with individuals with major depressive disorder and healthy controls, the researchers reported that individuals with both BD subtypes ruminated more frequently than the healthy controls did but not more than the individuals with unipolar depression[28]. Further, in a study for which individuals with both subtypes of BD who were either in an acute depressive episode or in remission were recruited, the participants were found to score higher on the rumination scale than the healthy controls. In this study, however, individuals with BD did not differ significantly from the healthy controls on self-focused positive rumination, and they even scored significantly lower than the control subjects on emotion-focused positive rumination [29]. An earlier study with a controversial result claimed that rumination was more evident in individuals with BD in the remitted phase than in the depressive phase[30]. The authors of another research paper concluded that the processes of dampening and emotion-focused positive rumination played important roles for individuals with BD [31]. Additional research focusing on positive rumination in individuals with BD revealed that these individuals endorsed more responses focused on positive affect and that these responses were explained by the level of hypomanic symptoms[32-34]. Unexpectedly, depressive rumination was also associated with hypomania severity in previous reports[35-38]. Moreover, depressive rumination was associated with lower self-esteem scores in individuals who were considered at high risk for BD[39].

Table 1 Examples of the components of the cognitive attentional syndrome and dysfunctional metacognitive beliefs in bipolar disorder

	Depressive phase	Hypo/manic phase
Perseverative thinking	<p>“Why am I so depressed? What is the point in living any more? What is the root cause of my depression? Why can't I just snap out of this feeling?”</p> <p>“What if I never get better? Will I always feel like this? What if I have a recurrence?”</p>	<p>“I can do whatever I like, I have never been stronger! I feel so great, and this feeling must last forever.”</p> <p>“How dare they think that I should not be doing the things I want to? Nobody has the right to tell me what I am allowed to do.”</p> <p>“What if my mood deteriorates? What if I start to feel depressed again? Will my health never be like everyone else's?”</p>
Attentional biases and threat monitoring	Constant mood monitoring, self-focused attention, focusing on any changes in depressive symptomatology, checking energy levels, body scanning for early warning signs of recurrence	Constant mood monitoring, self-focused attention, focusing on any changes in hypo/manic symptomatology, checking energy levels, body scanning for early warning signs of recurrence
Dysfunctional coping strategies	Thought control, inactivity, self-harm, alcohol/substance use, emotional avoidance, social withdrawal	Thought control, hyperactivity, impulsivity, alcohol/substance use, emotional overindulgence, increased social interaction
Negative metacognitive beliefs	<p>“Rumination is uncontrollable. Worrying will harm me. If my energy level changes during the day, this means that I am about to get depressed.”</p> <p>“My friends will leave me because of my never-ending rumination.”</p>	<p>“Rumination is out of my control. Worrying too much might harm me. I have a broken brain. My genes are responsible for my disorder, and there is no way to cure it.”</p> <p>“I can not form stable relationships because of my bipolar disorder. This has ruined my life.”</p>
Positive metacognitive beliefs	“Rumination will help me identify the cause of my depression. Worrying keeps me prepared for any unwanted consequences. Checking my mood will tell me when I am at risk for depression.”	“Thinking about my positive mood will make my day better. The more time I spend time on my heightened energy, the less probable that I fall back to my depression. Worrying that I may experience a relapse will help me identify any early warning signs.”

The subject of worry in BD patients has not attracted the same amount of scholarly attention as rumination. Nevertheless, individuals with BD type I and II were found to worry more frequently than healthy controls but not more than individuals with unipolar depression[28]. Similar results indicating individuals with BD worried more than healthy controls were also found in an earlier study[40]. However, these results were not replicated in a more recent study[26]. An examination of the frequency of worry in the different phases of BD revealed that worry was more often endorsed by individuals in their depressed phase compared to individuals in their manic phase, underlying the importance of mood state[41].

In summary, perseverative thinking has been found to be an important feature of BD, and many studies have identified its role in the severity, risk of relapse, and maintenance of BD. However, still unclear is how exactly perseverative thinking is associated with BD and whether any change in its frequency may impact the prognosis for BD. Also as yet undetermined are whether rumination and worry may differentially affect individuals with BD and whether targeting them specifically may be appropriate according to the phase of BD. More research is undoubtedly necessary to clarify if and to what degree MCT is effective in reducing perseverative thinking in BD patients. To this end, carefully designed, randomized controlled trials with sample sizes sufficient to detect clinically significant effect sizes are needed.

ATTENTIONAL BIASES (SELF-FOCUSED ATTENTION AND THREAT MONITORING)

To date, many studies have been conducted on the neurocognition of BD that have produced conflicting results due to cognitive heterogeneity and methodological differences. Factors such as different clinical and neuropsychological presentations of BD, different tools used in neuropsychological measurements, difficulties in excluding drug effects, and insufficient statistical power of sample sizes are some of the challenges to reaching consensus on the neurocognition of BD[42]. Nevertheless, more consistent results have been obtained regarding the neurocognition of BD in some domains, such as executive functions, verbal memory, and sustained attention[43].

In the literature, sustained attention is often measured with a computerized test called continuous performance test (CPT), while distinct attentional domains can be evaluated with tests like the Trail Making Test, Stroop Color-Word Association Test, and Digit Span[44]. In the CPT, a selection of stimuli is presented to the subject in an unpredictable way to focus the subject's attention. Several outcome criteria may be

obtained, such as omission error (failure to respond to the required target, which is a measure of target sensitivity), commission error (erroneous response to a non-target, which is a measure of false alarm), total number of correct responses, and reaction time[45]. Impairments have been suggested to be present in different attentional domains in particular episodes of BD[46].

In the first review regarding the attentional processes of BD patients, commission and omission errors were reported to be significantly present in manic patients and target detection (omission) errors were reported as persisting in patients with BD during remission[44]. Sustained attention deficit in BD, which is persistent in euthymia and is exacerbated in the active disorder period, has been suggested as a state-modulated deficit[47]. This finding was replicated in subsequent studies; additionally, state-dependent impairments have been proposed to be unrelated to medication, while deficits that become widespread in the acute episode may be partially related to medication[48]. Study findings have also indicated that distinguishing drug-related deficits from disease-related deficits is difficult and that drugs may have a certain degree of adverse effects on psychomotor speed and sustained attention. However, in first-episode and drug-naïve patients, the cognitive deficits detected were similar to those of patients with long-term drug use[49]. This reflects the need for appropriately designed studies that can demonstrate drug effects more clearly.

Regarding attentional processes in BD subtypes, although several prior studies suggested that BD type I may be related to worse attentional performance, more recent studies uncovered that both subtypes were associated with similar attentional impairment during euthymia and that the differences between them may be related to antipsychotics, which were more likely to be used in BD type I[50]. Current meta-analyses and reviews regarding the differences between BD types I and II also suggest that the severity of attentional impairment in BD type II is similar to the severity of such impairment in BD type I[42,43,49,51]. The effect size related to attentional impairment in BD has been reported as small to medium[43,52].

Attentional bias is one of the areas that has been increasingly investigated in BD studies in recent years. In the literature, attentional bias is investigated by using tests like the dot-probe task and the affective go/no-go test and by examining attentional biases against faces and words that have affective components. In one of the earliest studies in this field, Jongen *et al*[53] found that mildly depressed patients directed their attention away from depression-related and positive words and reported this finding was mood state-dependent. They also found that the bias away from positive words could also be seen in euthymia, which may be part of a trait effect. In a study that evaluated these findings in both BD patients and their relatives, the relatives did not differ significantly from the control group in terms of attentional biases. However, mildly depressed patients exhibited attentional biases similar to those observed in the study from Jabben *et al*[54]. In another study involving people on the bipolar spectrum, the subjects were found to have a negative self-referent information processing bias that was partially mediated by depressive symptomatology[55]. On the other part of the spectrum, manic patients were found to show no attentional vigilance to happy or sad expressions, but they avoided sad expressions and focused more on happy expressions in later emotion processing[56]. Like the study by Liu *et al* [56], Gruber *et al*[57] investigated the relationship between attentional biases and hypomania proneness. Gruber and associates found that hypomania proneness was positively associated with attentional bias toward happy, but not angry or fearful, faces. These findings show distinct attentional biases may be present in both depressive and manic episodes.

These consistent results regarding attentional biases in BD, especially in depressive episodes, were confirmed in subsequent studies. However, results regarding attentional biases in euthymia were conflicting. Several studies revealed that, regardless of the episode, attentional biases were present and an increased attention to threat may be a trait-based vulnerability[58,59]. However, in a larger sampled study, no differences in attentional bias were found compared to controls in euthymia[60]. Factors such as the inability to exclude drug effects, small sample sizes, and different clinical and neuropsychological presentations of BD may have caused these inconsistent results. Taken together, attentional bias is especially apparent in the depressive episode in BD, and this effect may be state-dependent.

Recent studies also suggest the existence of biases regarding threat in BD. Increased threat sensitivity is characterized by enhanced attentional biases toward negative stimuli and away from positive stimuli and it has been viewed as enhancing the need for cognitive control[61,62]. Threat sensitivity has also been associated with depressive and anxiety disorders in the past, and recently, findings have shown that it may also

be associated with BD[63-65]. One study demonstrated that threat sensitivity is increased in those with BD, in which anxiety disorder comorbidity is up to 60%[66]. Similar findings were found in another study conducted in a pediatric BD group that revealed that children with BD and anxiety disorder comorbidity had a bias toward threat compared to those without anxiety[67]. The same study also showed that hypo/mania scores were related to a greater bias toward threatening faces, with the authors stating that “current mood state also influences threat-related attention biases” [67]. These findings, which were also present in the pediatric group, indicate that further research is required on neurodevelopmental effects on attentional biases.

A particular way of threat monitoring encountered in individuals with BD is constant mood monitoring and body scanning to determine if energy levels are somehow predictive of a new depressive episode. An early study concluded that mood monitoring implied that individuals had to be vigilant to track any changes in their mood state, which could result in repeatedly checking it but remaining confused about its nature. With an analogy to hypochondriasis, the authors suggested that the individuals’ judgments about their moods could be clouded by an absorption in their mood state. Indeed, mood monitoring has been repeatedly associated with an increased self-focus, resulting in rumination and negative affectivity[68]. More recent research also demonstrated that, despite evidence to the contrary, some individuals may shift into a more depressive mood state after frequent assessment of their negative symptoms[69]. In fact, over 10% of individuals with BD reported that self-monitoring did not help to maintain their health, whereas over 25% of the participants in this survey reported that they were not sure whether self-monitoring had any effect on their health[70], confirming the earlier suggestion that repeated assessments may cloud their judgments. Such concerns were echoed in more recent surveys. Participants informed the researchers that their mood monitoring could potentially become preoccupying and unhelpful and that they might interpret their conclusions about their mood as negative when they were actually feeling well. Participants were also concerned that such practices may not seem normal and that engaging in them may draw additional attention from the general public[71]. Additionally, mood monitoring did not result in significantly decreasing mania scores[72]. Given the controversies over the effectiveness of mood monitoring in BD, experts recently published recommendations on how to implement it in routine practice. They suggested that without a clear rationale for using mood monitoring, and without reviewing the procedure with the patient, this practice can be detrimental. The experts also highlighted the need to normalize everyday mood fluctuations and to distinguish them from actual signs of relapse. The recommendations also included suggestions to respond to mood changes without mood monitoring. This set of recommendations calls for caution in employing mood monitoring in individuals with BD[73].

Studies on the attentional bias in BD have brought forward the investigation of the role of self-focused attention in BD. In past studies regarding the cognition of unipolar depression, self-focused style was found to contribute to the onset and maintenance of depression[74]. In a 3.5-year follow-up study examining the effects of self-focused attention on different stages of BD, controlling for depressive and manic symptoms, bipolar patients were found to experience significantly higher levels of depressive rumination and private self-consciousness than the controls[75]. These findings seem consistent with the findings from Johnson *et al*[33] that patients with BD have a ruminative response pattern to both depressive and positive moods. Self-focused attention research seems to mostly be conducted with anxiety and depression; thus, further studies regarding the relationship between self-focused attention and BD are needed.

In terms of cognitive self-consciousness, previous research demonstrated that patients with BD reflected more frequently on themselves than patients with schizophrenia, but they did so at rates similar to those of healthy subjects. Further, focusing on the self negatively correlated with excitement and hostility[76]. The researchers of another study, comparing individuals with BD and schizophrenia, arrived at the same conclusion, indicating that self-reflection was higher in the BD group[77]. Conversely, these findings were not demonstrated in a more recent study in which individuals with BD failed to discriminate not only from individuals with schizophrenia but also from healthy controls[78]. A similar non-significant difference was reported in individuals with BD subtypes and healthy controls[26]. Cognitive self-consciousness was found to be higher in patients with BD compared to controls, and it also correlated with an earlier age of onset of an affective disorder and with the severity of depression. The severity of depressive symptomatology was the only predictor of self-focused attention, highlighting the possibility of the specific role of depressive episodes in cognitive self-consciousness[79]. However, other studies have not

replicated this finding; instead, they reported that self-focused attention may more specifically correlate with anxiety levels. Interestingly, the previous study also did not find any significant differences between individuals with unipolar or bipolar depression and healthy controls[80]. This result was obtained in a later study as well [28]. However, another study claimed that, although individuals with unipolar and bipolar depression did not differ from each other on a measure of self-focused attention, both scored higher than healthy controls. This study also reported that cognitive self-consciousness correlated weakly with both manic and depressive symptom severity[81]. On the other hand, another study showed that individuals with BD did not differ from healthy controls on cognitive self-consciousness, but cognitive self-consciousness significantly correlated with worsening in executive functioning, according to the researchers[82]. Further, a comparative study identified that the need to control thoughts was associated with thought disturbance, whereas this was not valid for individuals with schizophrenia[78]. Focusing particularly on suicide attempts in BD patients, another study reported that self-focused attention may be protective against suicide attempts. The authors suggested that being aware of one's own thoughts may alert the individual about any threatening suicidal ideations, which may prompt the individual to seek help. In this study, cognitive self-consciousness was significantly lower in the group of individuals who previously attempted suicide[83]. Given that this is a rather controversial finding and interpretation of the metacognitive model, we strongly urge waiting for further studies to confirm this finding.

In summary, the literature data on attentional biases illustrate the following: deficits in attentional processes in the euthymic period in BD, the presence of mostly commission errors, that these impairments can also be seen in people with genetic risk for BD, and that attentional impairments are widespread in patients with mania. Although not consistent, in euthymia and in relatives of patients with BD, the literature shows that state-dependent, mood-changing attentional biases and a ruminative self-focused attention are present. Studies on cognitive bias modification demonstrate that attentional biases that are present in depression may be modified and that this may lead to changes in mood and reactivity to stressful events[84,85]. In BD patients, reducing the severity of symptoms and the risk of relapse may be possible with metacognitive interventions regarding self-focused attention and attention biases.

DYSFUNCTIONAL (BACKFIRING) COPING STRATEGIES

Patients diagnosed with BD need to cope with the various problems they encounter, the outcomes of their mental disorder, and unpleasant situations in general to stay healthy[86]. Coping has various definitions. Lazarus defined coping as both thoughts and behaviors that individuals use to control the internal and external requirements of conditions that are perceived as stressful[87]. Compas *et al*[88] described coping as a self-regulatory process volitionally and purposely explicitly established in response to stress. Considering the executive dysfunction due to neurotoxicity in BD, coping abilities have been reported to play a key role in modulating the relationship between stress and episodic recurrence[89]. It was reported by Goossens *et al*[86] that, among those with euthymic BD, those who had had 10 or more acute depressive episodes throughout their lives chose a more passive coping style. In addition, outpatients with BD had a less active reaction pattern and a more avoidant coping style compared with healthy people[86].

Green *et al*[90] compared the use of certain cognitive strategies for regulating negative emotions in patients with BD type I, unaffected relatives of BD patients, and healthy controls. The results were interesting: The BD group reported more frequently using maladaptive regulatory strategies, such as rumination, catastrophizing, and self-blame, which were previously associated with depression[90]. In a paper describing another study, Paans *et al*[91] reported that better executive functioning and fewer depressive symptoms were associated with more active coping in older adults with BD. In addition, they noted that associations between executive functioning and coping styles became non-significant when the depressive symptoms in euthymic participants were considered, indicating that even subclinical depressive symptoms may negatively influence active coping[91].

Fletcher *et al*[92] aimed to address the cognitive and coping styles in patients diagnosed with BD types I or II. They indicated positive relationships existed between both BD subtypes and depressive severity and maladaptive coping styles. Furthermore, a wider variety of negative cognitive styles were associated with BD type II depression symptoms[92]. An editorial by Grunze[93] underlined the results of the

study by Fletcher *et al*[92] and stated that only low levels of seeking support to cope with stress as a coping style, which increased the likelihood of a depressive episode at follow-up, predicted BD type I depression. Grunze[93] suggested that subtype-specific identification of cognitive and coping styles may identify and quantify the risk of relapse, which may provide clinicians with a way to reduce the risk of relapse by modifying specific areas of negative cognition and maladaptive coping styles.

Pavlickova *et al*[36] reported that adaptive coping significantly predicted an increase in self-esteem, which was associated with a decrease in ruminative thinking in a specified period. Similarly, Leung *et al*[94] showed that the level of adaptive coping predicted an increase in positive affect in patients with BD.

Another study examining BD aimed to calculate the cumulative effect of childhood abuse, neuroticism, social support, and coping style on depressive symptoms. The results showed that emotional childhood abuse, neuroticism, social support use, and active coping style affected depressive symptoms and indicated that 45.6% variability in depressive symptoms could be explained by these factors[95].

Suh *et al*[96] recently studied the similarities and differences in coping styles between BD and depressive disorder patients. More avoidant and task-oriented coping was associated with individuals with BD independent of the effect of depressive symptoms. The results revealed significant negative correlations between the severity of depression and both task and avoidance-oriented coping styles in both the BD group and the depressive group. However, avoidance-related coping had a significant negative correlation with depression scores only in the BD group.

Individuals with BD tended to believe that they needed to control their thoughts more frequently than healthy controls [34,82], which was evident for both BD subtypes [26,28]. The need to control thoughts seemed to negatively affect neurocognitive functioning[82]; furthermore, individuals with BD who had previously attempted suicide scored higher than those who had never attempted suicide, suggesting that the need to control thoughts was associated with increased risk for suicide attempts[83]. Additionally, thought control strategies were associated with an earlier age of onset of an affective disorder and with the severity of a depressive episode. Individuals with BD used worry and self-punishment more frequently than the control subjects as thought control strategies, whereas they used distraction and social control less frequently than the controls[34]. However, patients with BD in a depressive episode did not differ significantly from patients with unipolar depression in the frequency of their need to control thoughts, but the need to control thoughts did positively correlate with depression severity[80,81].

In summary, maladaptive coping strategies were frequently reported in patients with BD. These strategies are found to be associated with depression severity, negative affect, and relapse risk. Metacognitive interventions that aim to change these maladaptive coping strategies may improve both disorder severity and relevant BD aspects.

DYSFUNCTIONAL (MALADAPTIVE) METACOGNITIVE BELIEFS IN BD

Dysfunctional metacognitive beliefs are known to be transdiagnostic processes. A previously published meta-analysis included participants with BD. This meta-analysis concluded that negative metacognitive beliefs (beliefs about the uncontrollability and dangerousness of thoughts), lack of cognitive confidence, heightened cognitive self-consciousness, and the need to control thoughts were more prevalent in various psychiatric disorders. The authors also suggested that although metacognitive beliefs were transdiagnostic, specificity of higher dysfunctional metacognitive beliefs was also found in different diagnostic categories[97].

Studies specifically focusing on dysfunctional metacognitive beliefs in BD individuals have recently gained interest among researchers. Compared to healthy controls, individuals with BD reported higher scores for negative metacognitive beliefs, lack of cognitive confidence, and the need to control thoughts[26,80,82]. Other studies also suggested that higher self-consciousness was evident in individuals with BD[34,81]. Contradicting previous results, Favaretto *et al*[26] further claimed that positive metacognitive beliefs were more frequently endorsed by individuals with BD type II than by healthy controls. Other research has also pointed out that fewer metacognitive deficits may be present in those with BD than in those with schizophrenia[76-78]. Additionally, other researchers indicated that metacognitive beliefs may mediate the effect of early emotional abuse on psychotic symptoms through an affective pathway[98]. Dysfunctional metacognitive beliefs were more strongly

associated with depressive symptomatology[82] and with suicide attempts in individuals with BD type I[83]. In a study that compared healthy controls with individuals with both BD subtypes and with major depressive disorder on their metacognitive beliefs, the diagnostic groups did not differ significantly from each other, but they scored higher than the control group on negative metacognitive beliefs, lack of cognitive confidence, and the need to control thoughts. However, the diagnostic groups did not separate from the healthy controls on positive metacognitive beliefs and cognitive self-consciousness. This study also investigated metacognitive beliefs about rumination of the participants. The results revealed that, while negative beliefs about rumination (uncontrollability, danger, and negative interpersonal and social consequences) were higher in the diagnostic groups, scores on the positive beliefs about rumination did not differ between the groups[28]. In addition, preliminary results demonstrated that metacognitive interventions may be useful for individuals with BD[15,76,99].

In summary, although individuals with BD are known to present with dysfunctional metacognitive beliefs, further studies are still needed to clarify how these beliefs are associated with depressive symptomatology and whether they may also have an impact on hypomanic/manic symptomatology. Further studies focusing specifically on BD subtypes and different phases of the disorder are also needed. Assessment instruments developed for individuals for BD are also lacking. The effectiveness of MCT in BD needs to be investigated in large-scale, randomized controlled studies.

PROPOSED THEORETICAL FRAMEWORK FOR MCT IN BD

As summarized in the previous sections, components of CAS and dysfunctional metacognitive beliefs are evident in BD. Despite the minimal research on the effectiveness of MCT for BD, acknowledging the transdiagnostic nature of MCT, a theoretical framework for applying MCT for BD patients may be proposed. Following the treatment steps of the only published study on applying MCT in BD[15], which was based on the generic structure of MCT[12], we propose a sequential treatment protocol for BD (Figure 1): (1) Case conceptualization; (2) Socialization to the model and treatment; (3) Shifting the patient to the metacognitive mode and increasing meta-awareness of perseverative thinking; (4) Implementing the attention training technique (ATT); (5) Practicing detached mindfulness (DM); (6) Postponing perseverative thinking; (7) Modifying the uncontrollability of perseverative thinking beliefs and challenging other negative metacognitive beliefs; (8) Exploring and abandoning dysfunctional coping strategies, including all kinds of threat monitoring strategies, and suggesting behavioral activation; (9) Challenging positive beliefs about perseverative thinking; (10) Identifying and modifying negative beliefs about mood states; (11) Working on a relapse prevention plan with the patient; (12) Targeting fears of recurrence; and (13) Scheduling booster sessions.

This proposed treatment protocol is mainly based on the MCT treatment plan for depressive disorders[12]. However, for the plan to be compatible with the needs of individuals with BD, the therapist must make some adjustments and modifications. For the metacognitive case conceptualization of the patient, the therapist may need to focus on positive trigger thoughts (or other positive internal experiences), as well as negative ones. To identify the perseverative thinking style of the patient, the therapist may need to make note of any responses to positive affect and worries in addition to depressive rumination. The negative consequences section of the case conceptualization diagram needs to be completed with consideration of any increase in self-reported energy levels, hypomanic/manic affective tendencies, hyperactivity, increased goal-directed activities, changes in sexual interest, impulsivity, increased self-esteem, and grandiosity, in addition to conventional thoughts, affect, and behaviors observed in depression. The therapist and patient must work collaboratively to identify ruminative thinking styles and worrying, with a special focus on positive rumination and how that may interfere with the patient's goal to stay in remission. The role of positive rumination on unwanted consequences should be explored, and postponement and/or abandonment of positive rumination must be encouraged, as it is for depressive rumination and worrying. The uncontrollability and dangerousness of all types of perseverative thinking styles need to be challenged. Modifying beliefs about the negative interpersonal consequences of perseverative thinking need to incorporate a discussion on the responses to positive affect in addition to the conventional discussion about depressive rumination and worrying. Any beliefs about the advantages of perseverative thinking need to be questioned, specifically questioning

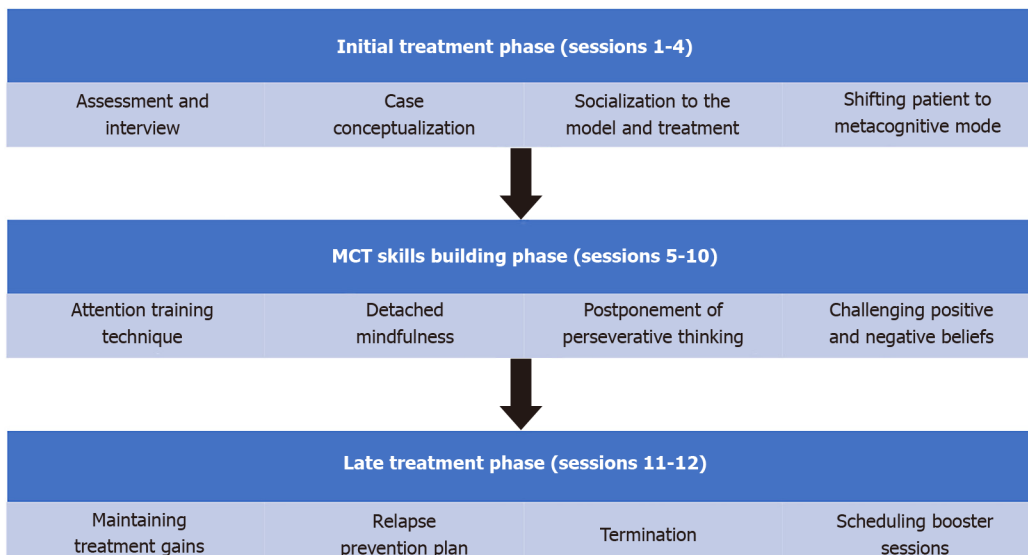


Figure 1 Structure of the proposed metacognitive treatment protocol for bipolar disorder. MCT: Metacognitive therapy.

the perceived positive effects of positive rumination along with the conventional work on depressive rumination and worrying. Dysfunctional coping strategies involving thought control strategies, inactivity, self-harm, alcohol/substance use, emotional avoidance, social withdrawal, and so on may be targeted as they are with a patient with depressive disorder. For the BD patient, the therapist also must acknowledge the possibility of increased goal-directed activity, hyperactivity, staying up all night to keep up with high expectations of self, impulsive behaviors, and related behaviors. Additionally, self-focused attention and constantly monitoring energy levels and mood states may be problematic for the patient. Since a recurrence may be feared and warning signs for new episodes may be in focus, the patient may wake up every day with an initial body scanning for any signs and symptoms suggestive of a new mood episode. The patient needs to abandon such biased and backfiring threat monitoring strategies. Although this is discussed with patients with depressive disorder, the therapist may also spend some time with BD patients focusing on the effects of incessantly looking for possible early warning signs and how this strategy may interfere with the patient's interpretation of naturally occurring mood swings. Other MCT techniques, such as ATT, DM, relapse prevention strategies, and setting up booster sessions, may follow the guidelines for patients with depressive disorders with modifications for patients with BD where necessary.

CONCLUSION

In conclusion, the metacognitive model of BD may provide a new perspective to further understand the underlying psychological mechanisms in patients with BD. Therefore, for a subgroup of patients with BD who fail to respond to evidence-based psychopharmacological and adjunctive psychotherapeutic interventions, MCT may be an alternative treatment option. More randomized controlled research undertaken in large samples is necessary to present more evidence on the effectiveness of MCT in BD.

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